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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,072	06/26/2000	Yoshihiro Miyamoto	000808	2708

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ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

SOLOMON, GARY L

ART UNIT PAPER NUMBER

2615

DATE MAILED: 06/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/604,072

Applicant(s)

MIYAMOTO, YOSHIHIRO

Examiner

Gary L Solomon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 9 is/are rejected.
- 7) ☒ Claim(s) 5-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6-6-2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3-26-2004 have been fully considered but they are not persuasive.
2. The claimed subject matter in the applicant's amended claims 1 and 4 still read on the Tsang reference.

The photodiode (light sensitive portion) stores a charge that is transferred to the detection capacitor MCAP through the N2 transistor. When the reset occurs at reset timing (level VRST), the detection capacitor is discharged and fed to the column output signal (Column 7, Lines 27-57).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., thermal noise removal) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
4. The disclosure is objected to because of the following informalities:
5. Page 10: Figures 4A-4E, 10A-10D, and 12A-12D must be described.
6. Appropriate correction is required.

Drawings

7. Figures 7 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

8. Claims 1, 3, and 4 are objected to because of the following informalities:

9. In regards to claim 1, after “a plurality of pixels”, there should be a limitation for “each pixel” and “of” should be deleted in line 5 and “voltage” should replace “level” in line 11 and “voltage” should replace “level” in line 12..

10. In regards to claim 3, “witch” should be replaced with “switch.” In line 3.

11. In regards to claim 4, after “a plurality of pixels”, there should be a limitation for “each pixel” in line 2.

12. Appropriate correction is required.

Claim Rejections - 35 USC § 102

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsang (US 5,900,623).

For claim 1, Tsang discloses:

A solid-state imaging device comprising:

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a plurality of pixels (Abstract), including a light sensitive portion for photo electrically converting incident light (Figure 4, PHOTODIODE),

a transfer gate for transferring a charge stored in said light-sensitive portion (Figure 4, Element N2),

a resettable detection capacitor for storing said charge transferred from said transfer gate (Figure 4, Element MCAP), and

a selection switch for outputting a charge of said detection capacitor according to of a selection signal (Figure 4, Element N5);

a charge amplifier for converting to a voltage a charge of said detection capacitor, which is outputted from the pixels (Figure 3), and

a correlated double sampling circuit for obtaining a voltage difference between a reset voltage and a detected voltage converted by the charge amplifier (Column 12, Line 10 through Column 13, line 26; Column 13, Lines 43-54.)

wherein said reset voltage is converted from a charge of the detection capacitor when being reset at reset timing, and said detected voltage is converted from a charge of the detection capacitor when a charge stored in the light sensitive portion is transferred to the reset detection capacitor, following to the reset timing (Column 7, Lines 27-57).

For claim 2, Tsang discloses all the previous limitations and Tsang also discloses said charge amplifier is a capacitive feedback-type impedance conversion circuit (Figure 3).

For claim 3, Tsang discloses all the previous limitations and Tsang also discloses said charge amplifier converts to the reset voltage, a reset level of said detection capacitor by said selection switch, and said detection capacitor being connected to an input of said charge

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amplifier, and thereafter, converts to the detected voltage said charge of the detection capacitor, when the charge stored in the light-sensitive portion is transferred to said detection capacitor by said transfer gate transitioning to ON (Column 12, Line 10 through Column 13, Line 26).

For claim 4, Tsang discloses:

a plurality of pixels (Abstract), including a light sensitive portion for photo electrically converting incident light and storing a charge, a reset gate (Figure 4, MCAP) connected to said light sensitive portion, for depleting said light sensitive portion by becoming conductive in response to a reset signal, and a transfer gate (Figure 4, N2), connected to light sensitive portion, for outputting a charge which is also stored in said light sensitive portion after being depleted by becoming conductive in response to selection signal, (Figure 4, PHOTODIODE),

a charge amplifier connected to said pixel, for converting to a voltage said detection capacitor charge, which is outputted from the pixels (Figure 3),

a correlated double sampling circuit for obtaining a voltage difference between a reset level and a detected level converted by the charge amplifier and

wherein a differential voltage between a reset level which said charge amplifier outputs when being reset, and a detection level, which said charge amplifier outputs in accordance with the charge outputted from said pixel, is outputted from said correlated double sampling circuit (Column 10, Lines 39-65; Column 13, Lines 15-26).

Claim Rejections - 35 USC § 103

15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsang (US 5,900,623) in view of Pritchard (US 6,636,261).

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For claim 9, Tsang discloses all the previous limitations, but lacks teaching wherein said reset gate maintains a quasi-conductive state while said light-sensitive portion stores a photo electrically converted charge.

However, Pritchard teaches a driven capacitor storage pixel sensor and array system wherein the reset is kept in a quasi-conductive state when the light sensitive portion stores the charge (Figures 2, 3A, 4, 5A, and 5B; Column 5, Lines 1-15).

Seemingly, the combination of these two inventions would have been clearly obvious to one of ordinary skill in the art at the time of the invention in order to prevent anti-blooming as suggested by Pritchard (Column 5).

Allowable Subject Matter

16. Claims 5-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

18. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L Solomon whose telephone number is (703)-305-4370.

The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary, Ngoc-Yen Vu can be reached on (703)-305-4946. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GLS


NGOC-YEN VU
PRIMARY EXAMINER